

REMARKS

Favorable reconsideration is respectfully requested.

The claims are 1 and 3 to 7 with claims 6 and 7 being withdrawn from consideration. Thus, Applicants hereby affirm the election of Group I containing claims 1 to 5.

With regard to the objection to claim 1 in Official Action paragraph 7, this has been overcome by the above amendment which adopts the Examiner's helpful suggestion.

With regard to the rejection on double patenting, this is overcome by the above amendment to claim 1 which incorporates the feature of claim 3 therein.

Claims 1 to 3 are rejected under 35 U.S.C. 102(b) as being anticipated by Chun (U.S. 6,486,058).

This rejection is respectfully traversed.

It is disclosed in Chun (U.S. 6,486,058) that a resist-reflow buffer layer is formed of a water-soluble organic over-coating material (WASOOM), and that any suitable water soluble organic over-coating material can be used which does not substantially react with the photoresist pattern at baking temperature and thus does not substantially form an interfacial layer with the photoresist pattern. Many water-soluble compounds, such as polyvinyl alcohol, polyvinylpyrrolidone, urea, etc., are listed for the WASOOM (See column 3, line 58 to column 4, line 11).

However, Chun does not teach or suggest the combination of polyvinyl alcohol with a water-soluble polymer which is at least one member selected from the group consisting of alkylene glycolic polymers, cellulosic derivatives, vinyl polymers and acrylic polymers. In the present invention, using a copolymer of polyacrylate and polyvinylpyrrolidone (Comparative Example 1), or a homopolymer of polyvinyl alcohol (Comparative Example 2) for the over-coating agent, cannot achieve advantageous effects of the present invention (see page 22, line 21 to page 23, line 14 in the present specification).

Furthermore, in the present invention, a heating treatment to cause thermal shrinkage of the film of the over-coating agent is preferably done at a temperature that will not cause thermal

fluidizing of the photoresist pattern. The temperature that will not cause thermal fluidizing of the photoresist pattern is such a temperature that when a substrate on which the photoresist pattern has been formed but no film of the over-coating agent has been formed is heated, the photoresist pattern will not experience any dimensional changes.

Performing a heat treatment under such temperature conditions is very effective for various reasons, e.g. a fine-line pattern of good profile can be formed more efficiently and the duty ratio in the plane of a wafer, or the dependency on the spacing between photoresist patterns in the plane of a wafer, can be reduced (see page 18, lines 6 to page 19, line 19).

In contrast, the resist pattern overcoated with WASOOM (=resist-reflow buffer layer) in Chun reflows to shrink the size of hole openings. The resist-flow buffer layer of Chun and the over-coating agent of the present invention unobviously differ from each other. Chun does not disclose or suggest the over-coating agent of the present invention.

Accordingly, the rejection on Chun is untenable and should be withdrawn.

No further issues remaining, allowance of this application is respectfully requested.

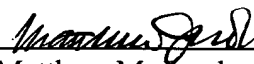
If the Examiner has any comments or proposals for expediting prosecution, please contact undersigned at the telephone number below.

Respectfully submitted,

Yoshiki SUGETA et al.

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By: _____


Matthew M. Jacob
Registration No. 25,154
Attorney for Applicants

MJ/kes
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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